CLAIMS

What is claimed is:

1. A system for high speed data transmission comprising:

a large core multimode fiber optic cable;

a light source for transmitting data; and

a lens having a focal length f for receiving light from said light source, said lens being approximately said focal length f from an exposed core of said large core multimode fiber optic cable wherein a light signal from said lens is focused on and has a diameter approximately equal to a core diameter of said large core multimode fiber optic cable to reduce excitation of higher order modes.

2. The system for high speed data transmission as recited in claim 1 wherein said lens collimates said light signal to reduce an excitation of higher order modes generated in said large core multimode fiber optic cable.

3. The system for high speed data transmission as recited in claim 1 wherein said light source is a diode laser.

4. The system for high speed data transmission as recited in claim 1 wherein light source is a light emitting diode.

5. The system for high speed data transmission as recited in claim 1 wherein said light source provides light having a wave length greater than 750 nanometers.

6. The system for high speed data transmission as recited in claim 1 wherein said light source transmits data at greater than 10 gigabits per second.

7. The system for high speed data transmission as recited in claim 1 wherein a signal level from said light source is launched to said large core multimode fiber optic cable at greater than 20dBM.

8. The system for high speed data transmission as recited in claim 1 wherein a cladding layer around said core of said large core multimode fiber optic cable attenuates higher order modes to reduce pulse spreading effects that limit said length/data rate product.

9. The system for high speed data transmission as recited in claim 8 wherein a refractive index of said core is substantially real to propagate said light signal with low loss and wherein said refractive index of said cladding layer includes a complex component that attenuates higher order modes generated in said large core multimode fiber optic cable.

10. The system for high speed data transmission as recited in claim 1 further including a receiver coupled to an opposing end of said large core multimode fiber optic cable for receiving said transmitted data.

11. A method for increasing a length/data rate product for a large core multimode fiber optic cable comprising the steps of:

providing a data transmission comprising a sequence of light pulses;

collimating light of said data transmission to minimize excitation of higher order modes in the large core multimode fiber optic cable;

focusing said light pulses onto an exposed end of a core of the large core multimode fiber optic cable such that a diameter of a light pulse is approximately equal to a core diameter of the large core multimode fiber optic cable; and

attenuating higher order modes of said light pulses as said data transmission propagates down the large core multimode fiber optic cable.

12. The method for increasing a length/data rate product for a large core multimode fiber optic cable as recited in claim 11 further including using a lens to collimate and focus said light pulses to the large core multimode fiber optic cable.

13. The method of increasing a length/data rate product for a large core multimode fiber optic cable as recited in claim 11 further including a step of increasing a signal level of said data transmission to compensate for propagation loss thereby further increasing a transmission distance through the large core multimode fiber optic cable.

14. The method of increasing a length/data rate product for a large core multimode fiber optic cable as recited in claim 11 further including a step of using a core greater than 50 microns in diameter in the large core multimode fiber optic cable.

15. The method of increasing a length/data rate product for a large core multimode fiber optic cable as recited in claim 11 further including a step of using a step index fiber optic cable having a doped cladding layer for absorptive attenuation of higher order modes.

16. A method of increasing a length/data rate product of a large core multimode fiber optic cable comprising the steps of:

launching light signals to the large core multimode fiber optic cable to promote low order modes and reduce higher order modes; and

attenuating higher order modes as said light signals travel through the large core multimode fiber optic cable.

17. The method of increasing a length/data rate product of a large core multimode fiber optic cable as recited in claim 16 further including a step of operating the large core multimode fiber optic cable to transmit data at greater than 10 gigabits per second.

18. The method of increasing a length/data rate product of a large core multimode fiber optic cable as recited in claim 17 further including a step of using a step index large core multimode fiber optic cable.

19. The method of increasing a length/data rate product of a large core multimode fiber optic cable as recited in claim 16 further including the steps of:

collimating light of said light signals prior to launching said light signals to the large core multimode fiber optic cable; and

focusing light of said light signals to the large core multimode fiber optic cable having a diameter approximately equal to a diameter of a core of the large core multimode fiber optic cable.

20. The method of increasing a length/data rate product of a large core multimode fiber optic cable as recited in claim 19 wherein said step of attenuating higher order modes as said light signals travel through the large core multimode fiber optic cable further include a step of having the large core multimode fiber optic cable include a doped cladding layer for intentional absorption loss of higher order modes.